REMARKS/ARGUMENTS

35 U.S.C. 101

In paragraph 3 of the Detailed Action, the Examiner has rejected claims 10 to 18 under 35 U.S.C. 101 as being directed solely to a "data format". Claims 10 to 18 have been amended and are now directed to an Update message embodied in a transmission medium. As discussed in the MPEP 2106.IV.B.1(c), a signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature (see O'Reilly, 56 US at 114-19; *In Re Breslow*, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980)).

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 101 rejection of claims 10 to 18.

35 U.S.C. 103

In paragraph 4 of the Detailed Action, the Examiner has rejected claims 1 to 6, 9 to 15, and 18 to 21 under 35 U.S.C. 103(a) as being unpatentable over the RFC 2547 document entitled "BGP/MPLS VPNs" (Rosen *et al.*) in view of the RFC 2685 document entitled "Virtual Private Network Identifier" (Fox *et al.*).

Given below is a brief description of the Rosen *et al.* and Fox *et al.* references followed by a detailed discussion as to why claims 1 to 6, 9 to 15, and 18 to 21 are patentable over the Rosen *et al.* and Fox *et al.* references.

Rosen *et al.*

The Rosen *et al.* reference discloses a method by which a Service Provider with an IP backbone may provide VPNs (Virtual Private Networks) for its customers. MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone and a BGP (Border Gateway Protocol) is used for distributing routes over the backbone. In particular, a PE (Provider Edge) router advertises a subscriber IP address/prefix tagged with a particular

community of interest identifier to all PE nodes within its domain. When a node receives an advertisement it checks to see if any of its subscribers have registered any interest in the community. If interest has been expressed, the information contained in the advertisement, a next-hop PE address, the subscriber IP address/prefix, and an MPLS tunnel label associated with the subscriber IP address/prefix is given to the interested subscriber. Unlike what is contemplated on page 3, line 33 and page 4, lines 1 and 2 of the present application, the Rosen *et al.* reference does not disclose an information distribution scheme which allows different networking systems to be used by each VPN and by the backbone. In the Rosen *et al.* reference the VPNs use the same protocol as that of the backbone, and the system of the Rosen *et al.* reference provides an IP VPN service only. In particular, in this reference the advertisements carry insufficient information to permit the combining of different VPN types, such as APM and IP for example. The Rosen *et al.* model would have to be redesigned to permit different VPN types.

Fox *et al.*

The Fox *et al.* reference discloses the need for a Global VPN Identifier. For example, as discussed on page 1, paragraphs 7 to 10 of the Fox *et al.* reference, "Because a VPN is private, it may use a private address space which may overlap with the address space of another VPN or the Public Internet" and 'an IP address only has meaning within the VPN in which it exists. For this reason, it is necessary to identify the VPN in which a particular IP address has meaning, "scope of the IP address"'. With respect, this reference discloses a Global VPN Identifier and has nothing to do with a BGP for distributing routes.

Claim 1

To begin, there are three requirements for establishing a *prima facie* case of obviousness: 1) all features must be present; 2) there must be an expectation of a reasonable chance of success; and 3) there must be some suggestion or motivation in the prior art to combine the references.

Claim 1 is directed to a "Border Gateway Protocol Speaker (BGP Speaker) in a communication system which implements at least one network based Virtual Private Network (NB-VPN) across a backbone, the at least one NB-VPN using an Open System Interconnect

(OSI) layer-2 protocol and an OSI layer-3 protocol, at least one NB-VPN using an OSI layer-2 protocol different from an OSI layer-2 protocol used by the backbone or using an OSI layer-3 protocol different from an OSI layer-3 protocol used by the backbone, the BGP Speaker transmitting an Update message being in conformance with a Border Gateway Protocol (BGP)", and recites:

"the Virtual Private Network (VPN) Membership information;

a VPN Reachability Mode field;

VPN Reachability information; and

Tunnel Mechanism information".

The Examiner has referred to page 20, paragraphs 1 to 4 of the Rosen *et al.* reference as disclosure for the "Tunnel Mechanism information". With respect, this passage discloses how security tunnels are created between pairs of CE (Customer Edge) routers in a VPN. In particular, the passage discloses how to enable a CE router transmitting a packet to determine the identity of CE routers that the packet will traverse. This is done by having every route have an attribute which identifies the next CE router that will be traversed if that route is followed. This information is presented as a BGP attribute. With respect, this does not equate with "Tunnel Mechanism information". In particular, the identification of a next router in the Rosen *et al.* reference provides no information on the tunnel mechanism used in this reference.

The Examiner has also conceded that the Rosen *et al.* reference does not disclose a "Virtual Private Network (VPN) Membership information" nor "a VPN Reachability Mode field", and refers to page 1, paragraphs 5 and 7 to 10 of the Fox *et al.* reference as disclosure for these claim features. With respect, what is disclosed in these passages is a Global VPN Identifier, and Applicant fails to see how this equates with "Virtual Private Network (VPN) Membership information" and a "VPN Reachability Mode field". In particular, as discussed on page 10, lines 23 to 26 of the present application, a VPN Reachability Mode field is used to indicate the type of model being used such as a piggybacking model or a VR (Virtual Router) model discussed on page 3, lines 18 to 27 for example. With respect, as admitted by the

Examiner the Rosen *et al.* reference does not disclose this claim feature and Applicant fails to see how a global VPN identifier as disclosed in the Fox *et al.* reference equates with this feature.

Regarding the claim feature "Virtual Private Network (VPN) Membership information", Applicant also fails to see how a Global VPN Identifier equates with this feature. In particular, although a Global VPN Identifier can be used as VPN membership information none of the cited references teach VPN membership information. In the Rosen *et al.* reference an event such as the presence of a site within a VPN is driven by the presence of subscriber routes. If no routes are available for a particular site, that particular site is unknown. In other words, in the Rosen *et al.* reference the propagation of VPN information is driven by the presence of subscriber routes, and without subscriber routes a particular VPN member is unknown within the VPN. In contrast, by having VPN membership information transmitted this allows members within the VPN of interest to be located without having to provide any information in the VPN Reachability Mode field. In particular, as discussed on page 9, lines 20 to 24 of the present application the VPN Reachability information can have zero or more VPN Reachability Entries. When there are zero VPN Reachability Entries the data format of the Update message can be used to provide membership information without having to provide or subscribe a route (VPN reachability information). This allows a site to be known as part of a VPN irrespective of whether a route is available.

None of this is taught in either of the cited references.

As such, the claim features of claim 1 are not all disclosed by the cited references, and requirement 1) for a *prima facie* case of obviousness cannot be satisfied.

Regarding requirement 2), since the features of claim 1 are not all disclosed by the cited references there is no reason to believe that there is any possible combination of the teachings of the cited references that produces the desired result of the invention as claimed, and therefore this requirement cannot be satisfied. In particular, regarding the claim feature "Virtual Private Network (VPN) Membership information", as discussed above this feature is not disclosed in the Rosen *et al.* reference. Instead, this reference discloses the identification of sites as being part of a VPN only when a route is available and when information on the route is communicated, and

Applicant fails to see how the disclosure of a Global VPN identifier as disclosed in the Fox *et al.* reference can produce a VPN membership information. Regarding the "VPN Reachability Mode field", as discussed above, in the Rosen *et al.* reference all the VPNs must use the same protocol as the backbone and there is no VPN Reachability Mode Field. Furthermore, Applicant fails to see how the disclosure of a Global VPN identifier can be used to produce such a claim feature, and the Examiner has provided no indication of how this could be done. Similarly, regarding the "Tunnel Mechanism", Applicant submits that there is no disclosure in the Fox *et al.* reference that can be used in combination with the teachings of the Rosen *et al.* reference to produce this claim feature.

As such, requirement 2) for a *prima facie* case of obviousness cannot be satisfied.

Regarding requirement 3), whereas the Rosen *et al.* reference teaches providing VPNs using an IP backbone, the Fox *et al.* reference solves a completely different problem which has nothing to do with providing VPNs across an IP backbone. As such, there can be no suggestion or motivation to combine these references. Furthermore, in rejecting claim 1 the Examiner states 'it would have been obvious to use the VPN identifier field of Fox because "it is necessary to identify the VPN in which a particular IP address has meaning"'. Applicant respectfully disagrees. As can be seen from the Rosen *et al.* reference there is no need for such a Global VPN identifier as evidenced in the Rosen *et al.* reference, which discloses multiple VPNs without making use of such an identifier. Thus, requirement 3) is also not satisfied.

None of the requirements for a *prima facie* case of obviousness is satisfied. The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 1.

Claim 2

Claim 2 depends on claim 1 and should be allowed for the same reasons as discussed above with reference to claim 1. Furthermore, claim 2 recites "wherein the VPN Membership information includes: ... a Number of VPN-IDs field". Again, the Examiner has referred to the Global VPN identifier of the Fox *et al.* reference as disclosure for this claim feature. However, as discussed on page 9, lines 15 to 16 of the present application, a VPN-ID field identifies a VPN

to which an NLRI (Network Layer Reachability Information) relates. Although the Global VPN identifier can be used in a VPN-ID field there is no disclosure in any of the cited references of "VPN Membership information" that includes "a Number of VPN-IDs field".

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 2.

Claim 3

Claim 3 depends on claim 1 and should be allowed for the same reasons as discussed above with reference to claim 1. The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 3.

Claim 4

Claim 4 depends indirectly on claim 1 and should be allowed for the same reasons as discussed above with reference to claim 1. Furthermore, claim 4 recites the additional claim feature:

"wherein a VPN Reachability Entry includes:

a VPN Reachability Type field;

a Length field; and

a VPN Reachability Value field".

In rejecting claim 4 the Examiner states "the VPN Reachability Entry is a block of bits, which can be segmented in anyway deemed appropriate based on the implementation, as stated by Fox". With respect, Applicant cannot find any such disclosure in the Fox *et al.* reference. In particular, the Fox *et al.* reference has nothing to do with VPN Reachability Entries.

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 4.

Claim 5

Claim 5 depends on claim 1 and should be allowed for the same reasons as discussed above with reference to claim 1. Furthermore, claim 5 further specifies the "Tunnel Mechanism information". However, as discussed above with reference to claim 1 there is no disclosure of any "Tunnel Mechanism information" in the Fox *et al.* reference nor in the Rosen *et al.* reference. As such, there can be no disclosure of the additional claim feature of claim 5.

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 5.

Claim 6

Claim 6 depends on claim 5 and should be allowed for the same reasons as discussed above with reference to claim 5. Furthermore, claim 6 recites the additional claim feature:

"wherein a VPN Tunnel Entry includes:

a Tunnel Type field;

a Length field; and

a Tunnel Value field".

Again, the Examiner states "the PM Tunnel Entries [sic] is a block of bits, which can be segmented in anyway deemed appropriate based on the implementation, as stated by Fox". With respect, there is no such disclosure in the Fox *et al.* reference. In particular, the Fox *et al.* reference has nothing to do with a VPN Tunnel Entry.

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 6.

Claim 9

Claim 9 depends on claim 1 and should be allowed for the same reasons as discussed above with reference to claim 1. Furthermore, claim 9 recites "wherein the Update message further includes a field indicating a topology of a NB-VPN". The Examiner has referred to page

10, paragraphs 3 to 5 of the Rosen *et al.* reference as disclosure for this claim feature. However, Applicant cannot find any such disclosure in that passage.

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claim 9.

Claims 10 to 18

In paragraph 6 of the Detailed Action, the Examiner has rejected claims 10 to 18 for the same reasons as the BGP Speaker claims 1 to 9 are rejected. Claims 10, 11, 12, 13, 14, 15, 16, 17, and 18 are patentable over the cited references for the same reasons that claims 1, 2, 3, 4, 5, 6, 7, 8, and 9, respectively, are patentable.

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claims 10 to 18.

In paragraph 7 of the Detailed Action, the Examiner has rejected claims 19 to 21 for the same reasons that the BGP Speaker claims 1 to 9 were rejected.

Claim 19 is directed to a Virtual Router (VR) and recites, among other features:

"the Update message further including information relating to a NB-VPN to which the VR belongs and information relating to networking systems used by the NB-VPN to which the VR belongs, and the VR including instructions for establishing an OSI layer-2 connection to at least one other VR in the communication system".

With respect, the Examiner has not addressed this claim feature of claim 19, and Applicant submits that this claim feature is not disclosed in any of the cited references. As such, requirement 1) for a *prima facie* case of obviousness cannot be satisfied. Furthermore, since these features are not disclosed in any of the cited references there is no reason to believe that the teachings of the cited references can be combined to produce the desired result of the invention as claimed in claim 19, and requirement 2) for a *prima facie* case of obviousness cannot be satisfied. Finally, as discussed above the Rosen *et al.* and Fox *et al.* references teach completely different solutions to different problems, and there is no suggestion or motivation to combine

these references. As such, requirement 3) for a *prima facie* case of obviousness cannot be satisfied.

Thus, none of the requirements for a *prima facie* case of obviousness are satisfied.

The Examiner is respectfully requested to reconsider and withdraw the rejection of claim 19.

Claim 20

Claim 20 depends on claim 19 and should be allowed for the same reasons as discussed above with reference to claim 19. Furthermore, claim 20 should be allowed for the same reasons as discussed above with reference to claim 1.

The Examiner is respectfully requested to reconsider and withdraw the rejection of claim 20.

Claim 21

Claim 21 depends on claim 20 and should be allowed for the same reasons as discussed above with reference to claim 20. Furthermore, claim 21 should be allowed for the same reasons as discussed above with reference to claim 9.

In paragraph 5 of the Detailed Action, the Examiner has rejected claims 7, 8, 16, and 17 under 35 U.S.C. 103(a) as being unpatentable over the Rosen *et al.* reference in view of the Fox *et al.* reference, and further in view of the RFC 2283 document entitled "Multiprotocol Extensions for BGP-4" (Bates *et al.*).

Claims 7, 8, 16, and 17

Each one of claims 7, 8, 16, and 17 depends directly or indirectly on one of base claims 1 and 10 and should be allowed for the same reasons as discussed above with reference to base claims 1 and 10. In particular, the Rosen *et al.* and Fox *et al.* references fail to disclose all of the claim features of base claims 1 and 10, and Applicants submits that the Bates *et al.* reference also fails to disclose the claim features of base claims 1 and 10 that the Rosen *et al.* and Fox *et al.*

references fail to disclose.

The Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. 103(a) rejection of claims 7 and 8.

In view of the foregoing, early favorable consideration of this application is earnestly solicited.

Respectfully submitted,

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